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INFRARED POLARIZER

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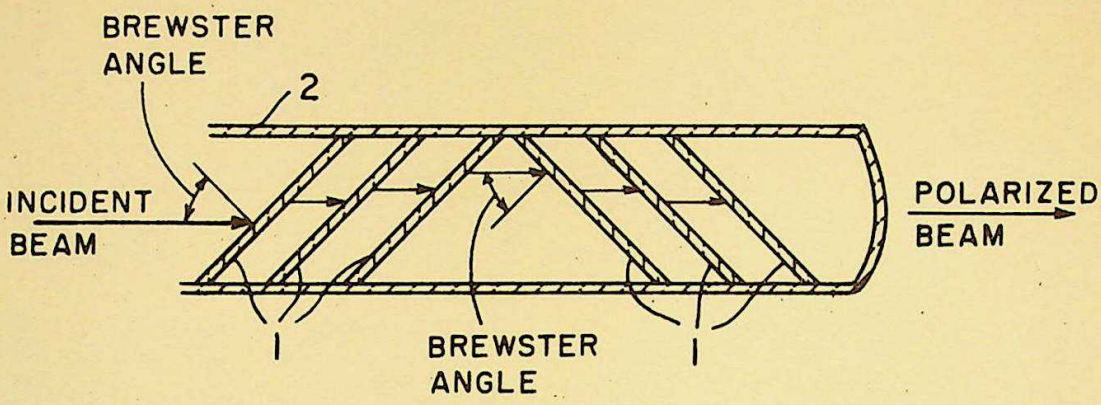

A typical prior art polarizer uses a plurality of silver chloride plates stacked in a parallel arrangement. In addition to the disadvantage of beam displacement caused by the refraction of the light as it passes through the parallel plates, the prior art polarizer suffers from low transmission efficiency and rapid deterioration unless extreme care is used in handling the silver chloride.

In the present polarizer a plurality of arsenic trisulphide glass plates 1 are mounted in a suitable support 2 which may for example be a cylindrical tube. Half of the total number of plates are mounted at the brewster angle with respect to the incident beam to give a beam displacement in one direction, while the other half of the plates are mounted at the brewster angle such as to give a beam displacement in the opposite direction. Thus, the beam displacement, exaggerated in the drawing, due to the refraction by one half of the plates is canceled by the beam displacement in the opposite direction due to the refraction by the other half of the plates.

The arsenic trisulphide glass plates, which can be used for wavelengths between 0.6 and 10 microns, are much more durable than the silver chloride plates used in previous devices. Furthermore the transmission loss is only a few percent for one direction of polarization and may be greater than 99 percent for the perpendicular direction. Moreover the glass plate material can be fabricated with such optical perfection that beam distortion is absent for all practical purposes.

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